

deeply impressed and smooth, posterior cicatrices confluent; shell cavity moderate and uniform, beak cavity slight; nacre dead white, purple or pink, or a combination of these shades.

Diameter 1.25, length 2.00, width 3.75 inches.

Habitat: Spanish Creek, Okefenokee Swamp, Charlton Co., Ga.
Type lot in National Museum.

Remarks: This is one of the most variable forms we have ever handled. It belongs to the *forbesianus*, *vestitus*, *Moussonianus* group, with which we have tried hard to place it specifically. Out of several hundred specimens, none could be found that were typical of any of the above-named species. It is the connecting link between the beautiful *hartwrightii* of South Florida, and the group above named, of Georgia. It is usually rayless, though some of the younger forms are densely covered with broad green rays, and it becomes very rough and ponderous in old age. In view of the many phases it assumes, it has been thought best to select no one individual as a type, but to make the description broad enough to embrace all of its variations, and to deposit examples of all with the National Museum.

ADDENDUM: July NAUTILUS, p. 31, first line of description of *Unio danielsii* insert the words "yet black" after "solid."

(To be continued.)

ANNOTATED LIST OF LAND AND FRESH-WATER SHELLS RECENTLY
COLLECTED IN THE VICINITY OF MIAMI, FLORIDA.

BY SAMUEL N. RHOADS.

The collection forming the subject of the following paper, was secured during a visit to Miami, covering a period of about four weeks, from January 12, 1899. The size and completeness of the collection is largely due to the field assistance of my kind friends, Messrs. Stevenson and Dickinson, of Miami, the former of whom has searched out the shells of South Florida for the past two years with commendable perseverance.

The classification of land species follows that of Pilsbry and Johnson's catalogue. The identifications were all made by Prof. H. A. Pilsbry, of the Academy of Natural Sciences of Philadelphia, where the collection is now located.

Family CYCLOSTOMATIDÆ.

Chondropoma dentatum (Say). Miami; pine woods under flat rocks; very abundant.

Family TRUNCATELLIDÆ.

Truncatella caribæensis "Sowb.," Rve. Miami. Found sparingly and only beneath the wet drift. Far above high-water mark on the bay side. Not found in similar positions in the tide-water limits of the Miami River, brackish water not seeming to agree with it.

Truncatella bilabiata Pfr. Miami. Abundant. The above notes on *caribæensis* are equally applicable to this associated species, which is easily distinguishable by its smaller size and dark coloration. It is ten times as numerous as the preceding.

Family HELICINIDÆ.

Helicina orbiculata Say. Miami and Lemon City. Abounding; especially in dense hammock at the bases of trees well under the vegetable mold in the winter season.

Family HELICIDÆ.

Cepolis varians (Mke.). Virginia Key. The remarks given under *Cerion incanum* equally apply to this shell. They are only found alive on "Hammock Keys." Virginia Key is too low for hammock growths.

Polygyra cereolus (Muhlf.). Virginia Key. A single bleached specimen taken on the beach.

Polygyra cereolus carpenteriana (Bld.). Miami and Virginia Key. Abundant and of universal distribution in all kinds of situations except muckland. The most abundant land snail of South Florida.

Polygyra septemvolva Say. Miami and Lemon City. The open muckland and wet prairie species, distinguished by large size, flatness and angularity. It is rare in the districts named.

Polygyra uvulifera (Shuttl.). Miami and Lemon City. Associated with *Chondropoma* under flat stones in pine woods in the proportion of one to ten of the latter. Rare in the wet lands.

Polygyra avara Say. Miami. Rare; only two specimens taken.

Polygyra pustula (Fér.). Miami. Another rare and strangely local species: found under decaying vegetation on the ground beneath oak hammock. Not taken in the pine woods.

Polygyra jejuna (Say). Miami and Lemon City. Local and generally rare, but abundant in colonies at certain seasons. On the underside of young cabbage palms in the early morning I found this neat species almost abundant in a small area near the standpipe in Miami. Elsewhere it was very scarce. It hibernates under stones in rock piles.

Thysanophora vortex (Pfr.). Miami. Abundant in most situations except the pine barrens.

Thysanophora dioscoricola caeca (Gpy.). Numerous in certain localities on the under surface of the leaves of magnolia and of palmetto. On the latter sometimes a score can be taken from a single leaf.

Thysanophora plagioptycha granum (Streb.). Miami. Only one specimen secured.

Family BULIMULIDÆ.

Drymaeus dominicus Rve. Miami and Lemon City. Rare. The very young of this fragile snail are often found associated with *P. dioscoricola caeca*, but the adults are seldom seen.

Liguus fasciatus (Müll.). Miami. Abundant; distribution limited to a narrow strip of hammock lands bordering the bay not more than one-fourth of a mile wide. Not found in mangroves. Dark colored varieties rare and apparently confined to the most densely forested hammock. This snail is largely eaten by tree crabs, which bite the shells in half during their winter hibernation on the tree trunks. The numerous basal portions of the shells firmly cemented to the trees is evidence of the frequency of this destruction.

Family UROCOPTIDÆ.

Urocoptis poeyana (Orb.). Miami. Abundant under stones in pine barrens. Perfect adult specimens with uninjured spires are very rare and when found exceedingly difficult to preserve.

Macroceramus pontificus (Gld.). Miami; rather rare; under edges of flat rocks.

Cerion incanum (Binn.). Virginia Key. Only dead shells of this species were found on this Key, whither they had probably been carried by the tide from some larger Key. All those secured were inhabited by crabs.

Family PUPIDÆ.

Strobilops labyrinthica Say (Pfr.). Miami and Lemon City; not rare, preferring moist hammock.

Strobilops hubbardi stevensoni Pilsbry. n. var. Miami. Rare : found only under bark of dead limbs in mangrove swamp. This subspecies was discovered by the writer in mangroves skirting the Bay close to the State Agricultural Experimental Station in the suburbs of Miami, and was found nowhere else. I requested Prof. Pilsbry to name it after my friend Mr. Stevenson, to whose conchological researches and friendly services the success of my work at Miami was largely due.

Bifidaria contracta (Say). Miami and Lemon City. Rather rare ; in hammock mold.

Bifidaria servilis (Gld.). Miami. Very rare, only two specimens being secured.

Bifidaria pentodon (Say). Lemon City. Rare, one specimen only, from hammock.

Bifidaria rupicola (Say). Miami. Rare, in moist hammock under bark and leaves.

Bifidaria rhoadsi Pils., n. sp. Miami, very rare.

Family ACHATINIDÆ.

Opeas octonoides (C. B. Ad.). Miami. Only found in damp mold under hammock trees along the high tide borders of the Miami River. Rare.

Opeas gracillima (Pfr.). Miami. Associated with the preceding, but less numerous. Sometimes found alive under rocks in same situations.

Family GLANDINIDÆ.

Glandina truncata minor Pilsbry. n. var. Miami, Lemon City and New Smyrna. Abundant. This depauperate form rarely grows to more than half the size of largest *truncata*.

Family ZONITIDÆ.

Vitrea indentata (Say). Miami and Lemon City. Rarely associated with *Zonitoides arboreus*, which it so closely resembles.

Conulus chersinus (Say). Miami. Rare ; associated with its more numerous and darker counterpart, *Strobilops labyriuthicus*, under moist rotten bark of open hammock.

Guppya gundlachi (Pfr.) Miami and Lemon City. Not common. Associated with *Zonitoides* and *Vitrea* under bark of logs.

Zonitoides arboreus (Say). Miami and Lemon City. Abundant.

Zonitoides dallianus (Simp.) Miami. Only eleven specimens found among two hundred *arboreus* collected.

Zonitoides minusculus alachuanus (Dall.) Miami, Lemon City and New Smyrna. This small white *Zonitoides* is found everywhere under decaying bark in damp hammock lands.

Family VAGINULIDÆ.

Vaginulus floridanus Binn. Miami. Not common. This seems to be the first record for *Vaginulus* from the east coast of the main land. Previous Florida records are from Charlotte Harbor and Punta Rossa.

Family AMPULLARIDÆ.

Ampullaria depressa Say. Miami River and Everglades. Abundant.

Family AMNICOLIDÆ.

Amnicola sanctijohannis Pilsbry. Miami River. Rare.

Potamopyrgus coronatus (Pfr.). Miami River. Rare; inhabiting small streams and ditches upon the aquatic vegetation in company with *Amnicola sanctijohannis*.

Family AURICULIDÆ.

Auricula pellucens Mke. Miami. This rare snail was found only in and under soft, rotten mangrove branches which lay on the mud in the mangrove swamps along the bay side. They have the power to deeply imbed themselves into the soft rotten wood.

Carychium exiguum (Say). Lemon City; locally plentiful in dark hammock under leaves and logs.

Melampus floridanus Shuttl. Miami. This rarer small species seems confined to the brackish water areas of the Miami River.

Melampus coffeus (Linn.). Miami. Abundant in salt water and more brackish areas, seeming to prefer mangrove swamps, but also in more open marshy places. where it ascends the higher sedges at certain seasons, apparently to deposit its eggs, as it does not seem to eat the grasses on which it is found.

Family LIMNÆIDÆ.

Limnæa cubensis Pfr. Miami River. A rare species.

Planorbis tumidus Pfr. Miami and Lemon City. In the edge of the Everglades at the head of the Miami River and in the ditches of the muck gardens in that neighborhood this animal abounded, associated with *intercalaris* in about equal numbers. It was rare in the Everglades proper.

Planorbis intercalaris Pilsbry. Miami and Lemon City. Abund-

ant. This is found sparingly associated with the following in the true Everglade territory.

Planorbis scalaris (Jay). Head of Miami River and Everglades adjacent. Rather rare. This peculiar form is most typical of the glades as contrasted with the *Planorbis* of the streams.

Planorbis dilatatus Gld. Lemon City. Rare; three specimens taken in a small stream.

Planorbis parvus Say. Lemon City. Only one specimen taken.

Planorbis cultratus Orb. Very rare. One specimen secured from a drainage ditch flowing into the Miami River two miles above its mouth. The type locality for *cultratus* is Cuba. It was subsequently found in Texas. This is the first record of it from Florida.

Ancylus peninsulæ Pils. & Johns. Miami and Lemon City. Rather rare. Taken on rotten leaves in still water.

Family PHYSIDÆ.

Physa heterostropha peninsulæ Pilsbry. Miami, Lemon City, Everglades, head of Miami River. Locally abundant, preferring small streams in swift water, where they are generally attached to weeds far below the surface.

Family CYRENIDÆ.

Pisidium abditum Hald. Miami and Lemon City. This minute species is rare and difficult to secure alive.

Family CYRENOIDIDÆ.

Cyrenoidea floridana Dall. Miami. Abundant locally in the outer edges of the Mangrove swamps skirting the bay.

Family UNIONIDÆ.

Unio paludicolus Gld. Upper Miami River and Everglades. Rare, or at least difficult to secure, owing to its hiding among the roots of thick algæ in swift water. One was dredged in a small stream near the town.

Unio papyraceus Gld. Head of Miami River above the rapids. Only three specimens of this fragile *Unio* were dredged while forty of *paludicolus* were being secured. It is more than possible that Gould's types of these two species came from the Miami region and perhaps from the Miami River.

GENERAL NOTES.

PLANORBIS OPERCULARIS Var. OREGONENSIS Van., Nautilus IX. p. 54, September, 1895, is preoccupied by *P. oregonensis* Tryon. Mon. Fresh-water Univalve Moll. of the U. S. 1870, p. 200. I would here propose the name *multilineatus* for my variety.—E. G. VANATTA.